



COLOUR TELEVISION

Chassis No. GA-7S

MODELS **21AXS500**

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

FEATURES

- ◆ Multi 21 Systems, 100-CH program Memory
- ◆ Full Auto Search System
- ◆ NICAM/A2 STEREO
- ◆ CATV (Hyperband) Ready
- ◆ NTSC Colour Comb Filter Function
- ◆ High Contrast Picture (Black Stretch Circuit)
- ◆ White Temperature Select
- ◆ English Language OSD
- ◆ Blueback Function with Auto OFF
- ◆ OFF Timer & Child Lock
- ◆ Hotel Mode & AV Mode (Movie/Music/News)
- ◆ SURROUND & AVL Function
- ◆ Rear AV-IN/Out Terminal & Component In
- ◆ Front AV-In Terminal & Sub-Woofer Output
- ◆ Sound Booter (Shakit)
- ◆ LNASI (Antenna Booter)

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WARNING

The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis. To prevent electric shock, do not remove cover. No user - serviceable parts inside. Refer servicing to qualified service personnel.

SPECIFICATIONS

Convergence	Self Convergence System
Focus	Electro-Static Focusing
Sweep Deflection	Magnetic
Intermediate Frequencies	
Picture IF Carrier	38.9MHz
Sound IF Carrier Frequency	
6.5MHz	32.4MHz
6.0MHz	32.9MHz
5.5MHz	33.4MHz
Colour Sub-Carrier Frequency	34.47MHz
Power Input	110 ~ 240V AC 50/60 Hz
Power Consumption	107W
Audio Power Output Rating	7.5W(rms) x 2
Speaker	
Size	10cm*5cm(x2)
Voice Coil Impedance	16 ohms at 400 Hz
Aerial Input Impedance	
VHF/UHF	75 ohms Unbalanced
Receiving System	PAL I, B/G, D/K & SECAM B/G, D/K, K1, & NTSC M
Receiving Channel	
VHF-Channels	E2(48.25MHz) thru E12(224.25MHz) C1(49.75MHz) thru C12(216.25 MHz)
UHF-Channels	S1(105.25MHz) thru S41(463.25MHz) E21(471.25MHz) thru E69(855.25MHz) C13(471.25MHz) thru C57(863.25MHz)
Dimensions	Width: 734mm Height: 419.5mm Depth: 353.8mm Weight(approx): 22.5kg
Cabinet material	All Plastics

Specifications are subject to change without prior notice

IMPORTANT SERVICE NOTES

Maintenance and repair of this receiver should be done by qualified service personnel only.

SERVICE OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by Connecting a 10K ohm Resistor in series with an insulated wire(such as a test probe) between picture tube dag and 2nd anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety .
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely.

X-RAY

This receiver is designed so that any X-Ray radiation is kept to an absolute Minimum. Since certain malfunctions or servicing may produce potentially hazardous radiation with prolonged exposure at close range, the following precautions should be observed:

1. When repairing the circuit, be sure not to increase the high voltage to more than 26.0kV (at beam 0 mA) for the set.
2. To keep the set in a normal operation , be sure to make it function on 23.0kV ±1.0kV (at beam 1000 mA) in the case of the set. The set has been factory -Adjusted to the above-mentioned high voltage.
 - 1. If there is a possibility that the high voltage fluctuates as a result of the repairs, never forget to check for such high voltage after the work.
3. Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-ray radiation.

BEFORE RETURNING THE RECEIVER

Before returning the receiver to the user , perform the following safety Checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver .
2. Inspect all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor- capacity networks, mechanical insulators etc.

ADJUSTMENT PRECAUTIONS

This model's setting are adjusted in two different ways: through the I2C bus control and in the conventional analog manner. The adjustments via the I2C bus control include preset-only items and variable data.

1. Setting the service mode by the microprocessor.

- (1). Press and hold the local key "VOL DOWN" & "CH UP" when power on the main switch, TV will enter into the SERVICE MODE in Adjustment Mode.(The initial value of EEPROM are automatically preset when new EEPROM is used).
Service Mode also can be reached by pressing "Service" key (code: 81 Hex)
- (2). Press the CH DOWN /UP key on the remote controller to select the items one by one in Adjustment Mode.
- (3). Using the VOLUME UP / DOWN key on the remote controller, the data can be modified.
- (4). When press the local key "VOL DOWN" & "CH UP" at the same time, it will be released from the service mode.
- (5) Press the MENU key on the remote controller to enter into NVM mode.
Press MENU key again to leave the NVM mode return to Adjustment Mode.
(Not recommended to modify the data unless as listed in BUS SETUP data)
- (6) Press both CH-UP and VOL-DOWN buttons on the TV set simultaneously or press the "SERVICE" (81HEX) key again, it will switch to the NORMAL mode position, and the microprocessor is out of the SERVICE mode.

2. Factory Presetting.

- (1). Press remote controller key of code "E D" for 4 seconds, the initial values are automatically preset.
- (2). The initial data are preset as listed in page 5~8.
- (3). Make sure whether the data need to modify or not (Initial data).
(Refer to BUS SETUP DATA)

Note: Once the chassis has been assembly together and in ready condition, please make sure it's go through initialize process (see sect 2 above)

Precaution: If haven't done this initialization, malfunction might be happen.

ADJUSTMENT ITEM

***Below are the adjustment items that should be done, PLS FOLLOW THE PROCEDURE.
Otherwise some adjustment items will not be accurate.

NO ***	ADJUSTMENT ITEM	EFFECTIVE MODEL	REVISION
1	BUS SET UP		
2	RF-AGC		
3	FOCUS ADJ		
4	V-SLOPE		
5	V-SHIFT50		
6	V-AMP-50		
7	H-SHIFT-50		
8	EW-W-50		
9	EW-PAR-50		
10	UPCOR-PAR		
11	LOCOR-PAR		
12	H-BOW		
13	H-PAR		
14	EW-TRAP		
15	SCREEN		
16	WHITE BALANCE		
17	SUB-BRIGHTNESS		
18	SUB-CONTRAST		
19	BEAM CURRENT CHECK		
20	SUB-COLOR		
21	SUB-TINT		
22	HV PROTECTOR CHECK		
23	OTHER PROTECTOR CHECK		
24	AV OUT CHECK		
25	AV IN CHECK		
26	COMPONENT IN CHECK		
27	CONTRAST CONTROL CHECK		
28	COLOR CONTROL CHECK		
29	BRIGHTNESS CONTROL CHECK		
30	TINT CONTROL CHECK		
31	SHARPNESS CONTROL CHECK		
32	CH DISPLAY COLOR CHECK		
33	SURROUND CHECK		
34	TREBLE CHECK		
35	BASS CHECK		
36	BALANCE CHECK		
37	LOUDNESS CHECK		
38	NORMAL DISPLAY CHECK		
39	WHITE TEMP CONTROL CHECK		
40	COLOR SYSTEM CHECK		
41	SOUND SYSTEM CHECK		
42	MP-IN CHECK		
43	NOISE MUTE CHECK		
44	OSD LANGUAGE QUANTITY CHECK		
45	SHOCK TEST CHECK		

ALL MODELS

USER DATA IN SERVICE MODE

* While SERVICE mode ON, EEPROM DATA will switch to the service data.
Also, once SERVICE mode OFF, EEPROM will also switch to service (default) data.

* In the service mode, the user data establish as below.

*1: For each CH, data is same as before switch to Service Mode.

The flow of Mode lists as following.

USER DATA	
CONTRAST	MAX (60)
COLOUR	CENT (0)
BRIGHTNESS	CENT (0)
TINT	CENT (0)
SHARPNESS	CENT (0)
WHITE TEMP	CENTER
ANTENA BOOSTER	OFF
S-VOLUME	MIN
SURROUND	OFF
TREBLE	+2
BASS	+2
BALANCE	CENT (0)
SOUND BOOSTER	ON
AVL	ON
BLUE BACK	OFF
C SYSTEM	AUTO
S SYSTEM	*1

* Direct Key-in Mode for Service Items in
Service Mode

RC (HEX)	SERVICE-ITEM
24	V-AMP-50 / V-AMP-60
54	V-SHI-50 / V-SHI-60
D4	V-SLOPE
74	H-SHI-50 / H-SHI-60
BC	EW-W-50 / EW-W-60
0C	H-PAR
64	V-LIN
E2	CUT-RS
D6	SUB COLOR
36	SUB-TINT
1E	VSD
0D	SUB-BRI

**AFTER INITIALIZED THE EEPROM (REFER TO FACTORY PRESETTING), READ DATA FROM
EEPROM ADDRESS 00H ~ 03H,AND COMPARE TO THE LIST BELOW. IF DIFFERENT,
INITIALIZE THE EEPROM.

ADDRESS	DATA	ADDRESS	DATA
00H:	00H	02H:	03H
01H:	00H	03H:	13H

*** There are two stages of service mode. First stage is ADJUSTMENT MODE; data from 01~36.
To go into second stage of service mode , press MENU key,Second stage is NVM MODE data from 000~3FF

ADJUSTMENT MODE (01~36)

1) Press CH UP/DOWN to select the item.

1) Press VOL UP/VOL DOWN to modify/ adjust the data.

Item	Setting Item	Setting Range	IC	Default (DEC)	FI X/ADJ/ AUT O	REM ARK
01	RF- AGC	0...63	UOC-TV	23	AUTO	
02	V-SLOPE	0...63	UOC-TV	31	ADJ	
03	V-SHI -50	0...63	UOC-TV	36	ADJ	
04	V-AMP -50	0...63	UOC-TV	20	ADJ	
05	H-SHI -50	0...63	UOC-TV	30	ADJ	PLS REFER TO ADJ ITEM FOR HORIZONTAL, VERTICAL, DEFLECTION LOOP
06	EW -W-50	0...63	UOC-TV	28	ADJ	
07	E/W -PAR- 50	0...63	UOC-TV	36	ADJ	
08	H-PAR	0...63	UOC-TV	30	ADJ	
09	H-BO W	0...63	UOC-TV	30	ADJ	
10	UPCOR- PAR	0...63	UOC-TV	42	ADJ	
11	LOCOR- PAR	0...63	UOC-TV	44	ADJ	
12	E/W TRAP	0...63	UOC-TV	30	ADJ	
13	V-LIN	0...63	UOC-TV	32	FIX	
14	S-COR	0...63	UOC-TV	32	FIX	
15	DRI-RS	0...63	UOC-TV	32	ADJ	PLS REFER TO ADJ ITEM FOR WHITE BALANCE
16	DRI-GS	0...63	UOC-TV	32	ADJ	
17	DRI-BS	0...63	UOC-TV	32	ADJ	
18	CUT -RS	0...63	UOC-TV	16	ADJ	
19	CUT -GS	0...63	UOC-TV	16	ADJ	
20	CUT -BS	0...63	UOC-TV	16	ADJ	
21	SUB- BRI	0...63	UOC-TV	24	ADJ	
22	SUB- CON	0...63	UOC-TV	59	ADJ	
23	SUB- COL	0...63	UOC-TV	10	ADJ	
24	SUB- TINT	0...63	UOC-TV	36	ADJ	BUS SET UP
25	SUB- SHARP	0...63	UOC-TV	32	FIX	
26	V-SHI -60	0...63	UOC-TV	31	FIX	
27	V-AMP-60	0...63	UOC-TV	31	FIX	
28	H-SHI -60	0...63	UOC-TV	38	FIX	
29	EW-W-60	0...63	UOC-TV	32	FIX	
30	E/W -PAR- 60	0...63	UOC-TV	31	FIX	
31	VSD	0/1	UOC-TV	0	FIX	
32	CUT OFF	0...63	UOC-TV	25	FIX	
33	DCXO	0...3	UOC-TV	2	FIX	
34	ISP MODE	0/1	UOC-TV	0	FIX	
35	BLOC	0...15	UOC-TV	4	FIX	
36	SUB-VOL	0...60	UOC-TV	60	FIX	

NVM MODE ITEM (5/5)												
ADDRESS (HEX)	DATA								MICON DEFAULT(Yes)	EEPROM RANGE(Yes)	REMARK	
	D7 TUNER BAND	D6	D5	D4	D3	D2	D1	D0 TUNER_SELECTION				
000C									21	00-83	FIX	
000F												
00D0												
00D1												
00D2		YD SECAM					YD PAL		21	00-FF	FIX	
00D3		YD N443					YD N386		11	00-FF	FIX	
00D4		YD AV-SECAM					YD AV-PAL		40	00-FF	FIX	
00D5		YD AV N443					YD AV N388		00	00-FF	FIX	
00D6		CL3-0					YD COMP		67	00-FF	FIX	
00D7		PW-TIME					SVM2-0-PAL		35	00-37	FIX	
00D8		WBR-50-C-F-P					WBR-50-C-F-P		66	00-FF	FIX	
00D9		WBR-60-C-F-P					WBR-60-C-F-P		84	00-FF	FIX	
00DA		BLOC (35)					LOUDNESSLD50-2		41	00-F7	FIX	
00DB		FTUN OFFSEDEM IF					PWLDSC		04	00-0F	FIX	
00DC		WBR-60-C-F-P (during Blue Black)					WBR-50-C-F-P (during Blue Black)		08	00-FF	FIX	
00DD		LOUDNESS LD2 (SHAKIT only)					LOUDNESS LD1 (SHAKIT only)		45	00-77	FIX	
00DE		LOUDNESS LD4 (SHAKIT only)					LOUDNESS LD3 (SHAKIT only)		13	00-77	FIX	
00DE		WHITE TEMP (MUSIC)					FZOM_ZOOM_MODE		16	26	FIX	
00E0		WHITE TEMP (MOVIE)					LANGUAGE		10	22	FIX	
00E1							WHITE TEMP (NEWS)		01	02	FIX	
00E2												
00E3												
00E4												
00E5												
00E6	PEAKFREQPALIN	PEAKFREQPALM					PEAKFREOPAL443	COR1_0	04	00-FF	FIX	
00E7	PEAKFREQDVD	PEAKFREQSECAM					PEAKFREONTSCM	PEAKFREONTSC443	D1	00-FF	FIX	
00E8	PWL-LAST	AUDIO_CFG					PHI	H-POS-FINE	5D	00-AF	FIX	
00E9	PRESET_WS_NEWS	PRESET_COR_NEWS					PRESET_WS_MUSIC	PRESET_COR_MUSIC	77	00-FF	FIX	
00EA	PRESET_WS_CTM	PRESET_COR_CTM					PRESET_WS_MOV	PRESET_COR_MOV	77	00-FF	FIX	
00EB	PRESET_SURROUND_NEWS	PRESET_SURROUND_MUSIC					TREBLE_FREQ_SELECTION	BASS_FREQ_SELECTION	02	00-AF	FIX	
00EC	RPA	SOC					ASSO_1	PRESET_SOURROUND_MOV	90	00-BE	FIX	
00ED	PSYS_CHISE_COLOR	LANGUAGE_OPTION					FSND_AGNE_SELECTION	RPO	04	00-1F	FIX	
00EE	DSGLS option	AVL Normal default setting option						OPTION_SHAKIT LOUDNESS_DSP	50	00-52	BUS SETUP	
00EF	SURROUND(NEWS)	SURROUND(MUSIC)					DIGIT ENTRY MODE	DIGIT ENTRY MODE	04	A6	FIX	
00F0							AIR / CABLE	SURROUND(MOVIE)	00	02	FIX	
00F1												
00F2												
00F3												
00F4	PWL	VSD(31)					MUS	PHI FORCE	92	00-FF	FIX	
00F5	DSK-PAL PAL-DVD	DSK-PAL_AV					BSD	LOCKEY_SRV ENTER	1B	00-FF	FIX	
00F6	AVL_GAIN	ISP-MODE (34)					EER_VERTG	ERR_XRAY	0C	00-BF	FIX	
00F7	OPTION_SMUTE_L	CP-TUNER					LOUDNESS_HIGH_BOOST	EER-1-8SUP	49	00-7D	FIX	
00F8	OPTION_SURROUND	OPTION_AV2					CB	DSGLS_SELECTION	E4	00-F5	BUS SETUP	
00F9		OPTION_TREBLE					MULTI21_SYS	OPTION_MPIN	45	00-7F	BUS SETUP	
00FA	AUTO SELECT	AVL OSD					OPTION_AVL_BOOSTER	OPTION_SHAKIT	F0	00-7D	BUS SETUP	
00FA		M.P.I.N					LOCK_TV	SAVE MODE (MUSIC)	01	00-33	FIX	
00FB								S-BOOSTER				
00FC												
00FD												
00FE												
00FF												

Note: Highlighted item cannot be adjusted due fixed by software. (If adjusted it will has no effect)

NVM MODE ITEM (5/5)													
ADDRESS (HEX)	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	MICON DEFAULT(Yes)	EEPROM RANGE(Yes)
0001												0000	0000-270F
0002												03	00-FF
0003												13	00-FF
0008												17	00-3F
0009												1F	00-3F
000A												24	00-3F
000B												14	00-3F
000C												1E	00-3F
000D												1C	00-3F
000E												24	00-3F
000F												1E	00-3F
0010												1E	00-3F
0011												2A	00-3F
0012												2C	00-3F
0013												1E	00-3F
0014												20	00-3F
0015												20	00-3F
0016												20	00-3F
0017												20	00-3F
0018												20	00-3F
0019												10	00-3F
001A												10	00-3F
001B												18	00-3F
001C												3B	00-3F
001D												0A	00-3F
001E												24	00-3F
001F												20	00-3F
0020												21	00-3F
0021												20	00-3F
0022												21	00-3F
0023												21	00-3F
0024												29	00-3F
0025												1C	00-3F
0026												1F	00-3F
0027												1A	00-3F
0028												1F	00-3F
0029												20	00-3F
002A												28	00-3F
002B												20	00-3F
002C												20	00-3F
002D												22	00-3F
002E												20	00-3F
002F												1D	00-3F
0030												20	00-3F
0031												20	00-3F
0032												1F	00-3F
0033												20	00-3F
0034												28	00-3F
0035												20	00-3F
0036												20	00-3F
0037												22	00-3F
0038												20	00-3F
0039												1D	00-3F
003A												20	00-3F
003B												20	00-3F
003C												27	00-3F
003D												23	00-3F
003E												1F	00-3F
003F												0B	00-3F

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NVM MODE ITEM (2/5)										MICON		EPPROM		REMARK	
ADDRESS (HEX)	D7	D6	D5	D4	D3	D2	D1	D0		DEFAULT (True)		RANGE (Fw)			
0040				EW-PAR-P60						20		00-3F		FIX	
0041				V-SHI-60 (26)						1F		00-3F		FIX	
0042				V-AMP-60 (27)						1F		00-FF		FIX	
0043				H-SHI-60 (28)						26		00-FF		FIX	
0044				EW-W-60 (29)						20		00-3F		FIX	
0045				EW-PAR-60 (30)						1F		00-3F		FIX	
0046				VER-SHIP-60						24		00-FF		FIX	
0047				VER-AMP-P60						25		00-FF		FIX	
0048				HOR-SHI-P60						25		00-3F		FIX	
0049				EW-W-P60						0A		00-3F		ADJ	
004A				EW-PAR-P60						1E		00-3F		ADJ	
004B				CUT OFF (32)						19		00-3F		ADJ	
004C				DCXO (33)						02		00-04		ADJ	
004D				DRHLC (40)						20		00-3F		ADJ	
004E				DRI-GLC (41)						20		00-3F		ADJ	
004F				DRI-BLC (42)						20		00-3F		ADJ	
0050				CUT-RLC (43)						20		00-3F		ADJ	
0051				CUT-GLC (44)						20		00-3F		ADJ	
0052				DRI-RLW (30)						20		00-3F		ADJ	
0053				DRI-GLW (31)						20		00-3F		ADJ	
0054				DRI-BLW (32)						20		00-3F		FIX	
0055				CUT-RLW (33)						20		00-3F		FIX	
0056				CUT-GLW (34)						20		00-3F		ADJ	
0057				DRI-RLC-DVD (67)						20		00-3F		FIX	
0058				DRI-GLC-DVD (68)						20		00-3F		ADJ	
0059				DRI-BLC-DVD (69)						20		00-3F		ADJ	
005A				CUT-RLC-DVD (70)						20		00-3F		ADJ	
005B				CUT-GLC-DVD (71)						20		00-3F		ADJ	
005C				DRI-RLW-DVD (67)						20		00-3F		ADJ	
005D				DRI-GLW-DVD (68)						20		00-3F		ADJ	
005E				DRI-BLW-DVD (69)						20		00-3F		ADJ	
005F				CUT-RLW-DVD (60)						20		00-3F		FIX	
0060				CUT-GLW-DVD (61)						20		00-3F		FIX	
0061				OF-COL-TV						1C		00-3E		FIX	
0062				OF-COL-AV						27		00-3E		BUS SETUP	
0063				OF-COL-DVD						20		00-3E		BUS SETUP	
0064				OF-COL-P						28		00-3E		FIX	
0065				OF-COL-S						24		00-3E		FIX	
0066				OF-COL-N4						27		00-3E		FIX	
0067				OF-COL-N3						27		00-3E		FIX	
0068				OF-SHP-TV						21		00-3E		FIX	
0069				OF-SHP-AV						2B		00-3E		FIX	
006A				OF-SHP-DVD						2B		00-3E		FIX	
006B				OF-SHP-P						23		00-3E		FIX	
006C				OF-SHP-S						1F		00-3E		FIX	
006D				OF-SHP-N4						1F		00-3E		FIX	
006E				OF-SHP-N3						28		00-3E		BUS SETUP	
006F				OF-TINT-TV						14		00-3E		FIX	
0070				OF-TINT-AV						1E		00-3E		FIX	
0071				OFFSET_OF_COL_DVD_FIELD_FREQ_60HZ						1F		00-3E		FIX	
0072				OF-TINT-ADJ						1F		00-3E		FIX	
0073				BB-TINT						20		00-3E		FIX	
0074				UBASS_MUSC						0F		00-3C		FIX	
0075				UBASS_NEWS						0A		00-3C		FIX	
0076				UBASS_MOV						0F		00-3C		BUS SETUP	
0077				UTREBLE_MUSC						10		00-3C		BUS SETUP	
0078				UTREBLE_NEWS						0A		00-3C		FIX	
0079				UTREBLE_MOV						10		00-3C		BUS SETUP	
007A				UBRI-MUSC						1E		00-3E		FIX	
007B				UBRI-NEWS						1E		00-3E		FIX	
007C				UBRI-MOV						1E		00-3E		FIX	
007D				UCOL-MUSC						1E		00-3E		FIX	
007E				UCOL-NEWS						18		00-3E		FIX	
007F				UCOL-MOV						24		00-3E		FIX	

Note : Highlighted item cannot be adjusted due fixed by software. (If adjusted it will has no effect)

NVM MODE ITEM (3/5)																	REMARK
ADDRESS (HEX)	DATA								MICON DEFAULT(True)	EPPROM RANGE(Fw)							
	D7	D6	D5	D4	D3	D2	D1	D0									
0080				U-CON-MUSC					3C		00-3C				FIX		
0081				U-CON-NEWS					3C		00-3C				FIX		
0082				U-CON-MOV					3C		00-FC				FIX		
0083				U-SHP-MUSC					1E		00-FE				FIX		
0084				U-SHP-NEWS					18		00-3E				FIX		
0085				U-SHP-MOV					24		00-3E				FIX		
0086				OSD-BRIGHTNESS					1F		00-1F				BUS SETUP		
0087				V-POS-OSD					30		00-3F				FIX		
0088				H-POS-OSD					01		00-3F				FIX		
0089				AUTO-AGC-MAX					0F		00-20				FIX		
008A				SYM2-0-NTSC					05		00-07				FIX		
008B				VER-AMP-START					19		00-3F				FIX		
008C				OFFSET_OF_COL_DVD_FIELD_FREQ_50HZ					1F		00-3E				FIX		
008D				V-POS-OSD60HZ					1A		00-3F				FIX		
008E				SMEL-GAIN					B0		00-FF				FIX		
008F				FDAC-VOL1					0F		00-3C				FIX		
0090				FDAC-VOL2					1E		00-3C				FIX		
0091				FDAC-VOL3					2D		00-3C				FIX		
0092																	
0093				OFFSET_TINT_N443					1F		00-3E				FIX		
0094				SHAKIT_MEL					46		00-FF				FIX		
0095				SHAKIT_MER1					96		00-FF				BUS SETUP		
0096				SHAKIT_MER2					9C		00-FF				BUS SETUP		
0097				SHAKIT_MER3					A3		00-FF				BUS SETUP		
0098				SHAKIT_MER4					A5		00-FF				BUS SETUP		
0099				OPTION_HOTEL_MAX_VOL					05		00-3C				FIX		
009A				OPTION_HOTEL_PRG					02		00-63				FIX		
009B				SUB-VOL (36)					3C		00-3C				FIX		
009C				OFFSET_SHARPNESS_LNA					14		00-3F				FIX		
009D				STARTIMER1					CF		00-FF				FIX		
009E				STOPMER					00		00-FF				FIX		
009F				CUT-BS(20)					10		00-3F				FIX		
00A0				CUT-BS-DVD					20		00-3F				FIX		
00A1				STARTIMER2					A9		00-FF				FIX		
00A2				OFF_CON					20		00-3F				FIX		
00A3				OFF_BRI					20		00-3F				FIX		
00A4				AV2_BRI					23		00-3F				BUS SETUP		
00A5				FTUN_OFFSDEM_IF					16		00-3F				FIX		
00A6																	
00A7																	
00A8				CONTRAST (MUSIC)					3C		00-3C				FIX		
00A9				COLOUR (MUSIC)					1E		00-3C				FIX		
00AA				BRIGHTNESS (MUSIC)					1E		00-3C				FIX		
00AB				TINT (MUSIC)					1E		00-3C				FIX		
00AC				SHARPNESS (MUSIC)					1E		00-3C				FIX		
00AD				BASS (MUSIC)					0F		00-14				FIX		
00AE				TREBLE (MUSIC)					10		00-14				FIX		
00AF				CONTRAST (NEWS)					32		00-3C				FIX		
00B0				COLOUR (NEWS)					18		00-3C				FIX		
00B1				BRIGHTNESS (NEWS)					1E		00-3C				FIX		
00B2				TINT (NEWS)					1E		00-3C				FIX		
00B3				SHARPNESS (NEWS)					18		00-3C				FIX		
00B4				BASS (NEWS)					0A		00-14				FIX		
00B5				TREBLE (NEWS)					0A		00-14				FIX		
00B6				CONTRAST (MOVIE)					3C		00-3C				FIX		
00B7				COLOUR (MOVIE)					24		00-3C				FIX		
00B8				BRIGHTNESS (MOVIE)					1E		00-3C				FIX		
00B9				TINT (MOVIE)					1E		00-3C				FIX		
00BA				SHARPNESS (MOVIE)					24		00-3C				FIX		
00BB				BASS (MOVIE)					0F		00-14				FIX		
00BC				TREBLE (MOVIE)					10		00-14				FIX		
00BD				VOLUME					00		00-3C				FIX		
00BE				BALANCE					1E		00-3C				FIX		
00BF				LAST PROGRAM					01		00-66				FIX		

NVM MODE ITEM (4/5)

ADDRESS (HEX)	DATA							MICON DEFAULT(No)	EEPROM RANGE(No)	REMARK
	D7	D6	D5	D4	D3	D2	D1	D0		
00C0								0A	00-66	FIX
00C1								14	00-66	FIX
00C2								1E	00-66	FIX
00C3								28	00-66	FIX
00C4								01	00-66	FIX
00C5								64	00-66	FIX
00C6								03	00-FF	FIX
00C7								08	00-FF	FIX
00C8								0A	00-FF	FIX
00C9								AA	00-FF	BUS SETUP
00CA								B4	00-FF	BUS SETUP
00CB								15	00-3C	FIX
00CC								3C	00-3C	FIX
00CE								7	00-3C	FIX

Note: Highlighted item cannot be adjusted due fixed by software.(If adjusted it will has no effect)

BUS SET UP (EEPROM DATA)			
Address (HEX)	EEPROM ITEM S	Data (HEX)	REM ARK
01F	SUB-SHARP (25)	1E	FIX (Data same as adjustment item 25 SUB-SHARP = 30 (decimal))
027	SUB-TINT-DVD	24	FIX
062	OF-COL-AV	21	FIX
063	OF-COL-DVD	2A	FIX
06E	OF-SHP-N3	1F	FIX
076	U-BASS_MOV	0C	FIX
077	U-TREBLE_MUSC	0D	FIX
079	U-TREBLE_MOV	0C	FIX
086	OSD BRIGHTNESS	0D	FIX
095	SHAKIT_MER1	71	FIX
096	SHAKIT_MER2	76	FIX
097	SHAKIT_MER3	78	FIX
098	SHAKIT_MER4	82	FIX
0A4	AV2_BRI	24	FIX
0BF	LAST PROGRAM	05	FIX
0C9	SHAKIT_MER5	8A	FIX
0CA	SHAKIT_MER6	91	FIX
0EE	DSGLS_OPTION/AVL_NORMAL_DEFAULT SETTING_OPTION/ OPTION_SHAKIT_LOUDNESS_DSP	52	FIX
0EF	SURROUND(NEWS)/SURROUND(MUSIC)/ DIGIT ENTRY/AV MODE	00	FIX
0F4	PWL/VSD(31)/VIRGIN/ BPB2/ FMI/ MUS/ PHI_FORCE/DSK-NOT-PAL-AV	D2	FIX
0F8	SURROUND_OPTION/ DVD_OPTION/ AV2 OPTION/ MULT1 SYS_OPTION/ CB/ CBS/	F4	FIX
0F9	AVL OSD_OPTION/ TREBLE_LIMIT_OPTION/ BASS_LIMIT_OPTION/ LNABOOTER_OPTION/ AVL_ON_VOL_TABLE_OPTION/ SHAKIT OPTION/ MP_IN_OPTION	4C	FIX
0FA	AUTO_SELECT/ M.P.IN/BLUEBACK/ LAST POWER/ LOCK_TV/AVL_SAVE_MODE/	B0	FIX
0FB	PICTURE_NR(NEWS)/ PICTURE_NR(MOVIE)/ S-BOOTER/ LOUDNESS	00	FIX
6FE	FACTORY SHIPOUT SOUND SYSTEM	01	FIX
6FF	FACTORY SHIPOUT LANGUAGE	00	FIX

SHIPPING SETTING & CHECKING

* The following default data has been factory set for the E2PROM follow by pressing MODEL SET key.

LANGUAGE	SOUND SYSTEM
ENGLISH	B/G

ITEMS	DATA SETTING
LAST POWER	ON
LAST TV/AV MODE	TV MODE
LAST POSITION	CH 1
FLASHBACK CHANNEL	CH 1
1/2 DIGIT ENTRY	2 DIGIT ENTRY
VOLUME	0 (Min)
BLUE BACK	OFF
OFF TIMER	-:-
CHILD LOCK	OFF
PASSWORD	0000
ANTENNA BOOSTER	OFF
AFT	ALL CH ON
COLOR SYSTEM	ALL CH AUTO
SKIP	ALL CH OFF
FAVOURITE PROGRAM A	CH 10
FAVOURITE PROGRAM B	CH 20
FAVOURITE PROGRAM C	CH 30
FAVOURITE PROGRAM D	CH 40
AV MODE	MOVIE
CONTRAST	60
COLOUR	+6
BRIGHTNESS	0
TINT	0
SHARPNESS	+6
PICTURE NR	OFF
WHITE TEMP	0
SURROUND	OFF
TREBLE	+2
BASS	+2
S-BOOSTER	ON
AVL	ON

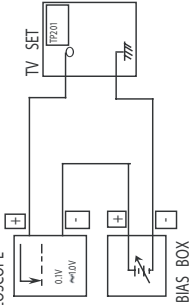
FACTORY SETTING BY MODEL
(Reference : Geomagnetism Adjustment)

MODEL	MAGNETIC FIELD (V, H) nT	BACKGROUND	LANG	S-SYS	LANG.QTY
INDONESIA	-20,000	40,000	ENGLISH	B/G	1

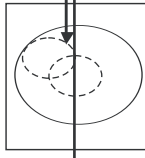
1: ENGLISH

ADJUSTMENT PRECAUTION: Make sure TV Set is in "Normal Condition" before switch to Service Mode for Adjustment.

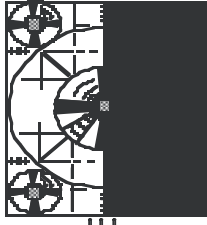
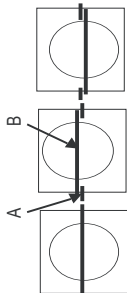
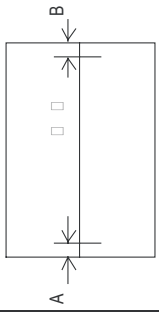
1. PIF ADJUSTMENT CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	RF-AGC TAKE OVER POINT ADJUSTMENT (I2C BUS CONTROL) (AUTO & MANUAL ADJ.)	(1) Receive "PAL COLOR BAR" signal. Signal Strength: $56 \pm 1\text{dB}\mu\text{V}$ (75 ohm open) (2) Connect the oscilloscope to JA402 (Tuner's AGC Terminal) as shown in figure 3-1.  OSCILLOSCOPE TV SET BIAS BOX (3) Call "01 RF-AGC" mode in service mode. Adjust the "01RF AGC" bus data to obtain the Tuner output pin drop $0.1 \sim 1.0\text{V}$ below maximum voltage. (4) Change the antenna input signal to $63 \sim 67\text{dB}\mu\text{V}$, and make sure there is no noise. (5) Turn up the input signal to $90 \sim 95\text{dB}\mu\text{V}$ to be sure that there is no cross modulation beat.	* for Auto ADJ (1) Receive "PAL COLOR BAR" signal signal strength : $56 \pm 1\text{dB}\mu\text{V}$ (75 ohm open). (1) Go to service mode. (2) Go to service data 01 RF-AGC, press R/C to operate auto key (Hex C1). Blue display with OK sign indicates the adjustment is working properly (3) If appear red display with NG sign, increase data some step and please repeat step 2. (4) Proceed step 4 & 5 in manual mode.

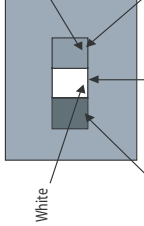
2. FOCUS ADJUSTMENT

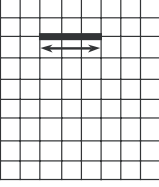
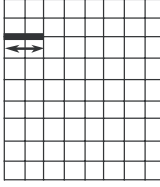
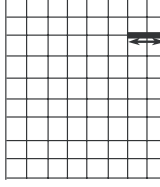
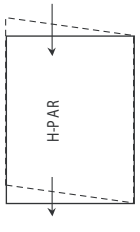
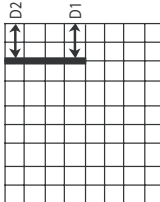
NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	FOCUS	(1) Receive the "Monoscope Pattern" signal. (2) Press R/C to set Picture NORMAL condition. (3) Adjust the focus control to get the best focusing.	 Focusing Point (middle of center and edge of monoscope pattern)

3. HORIZONTAL, VERTICAL, DEFLECTION LOOP ADJUSTMENT

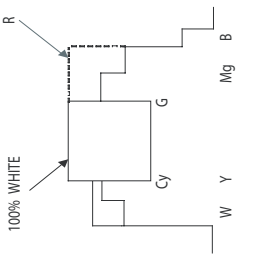
NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	V-SLOPE (I2C BUS CONTROL)	(1) Receive Monoscope Pattern Signal (PAL 50 Hz). (2) Choose the service data 02 V-SLOPE. (3) Adjust the V-SLOPE as shown in Figure 1.1 CAUTION:- PLEASE AGING TV MORE THAN 10 MINUTES BEFORE ADJUSTMENT.	 A = Out of spec B = OK C = Out of spec Figure 1.1
2	V-SHIFT50 (I2C BUS CONTROL)	(1) Receive Monoscope Pattern Signal (PAL 50 Hz). (2) Choose the service data 03 V-SHIFT-50 (3) Adjust V-SHIFT-50 bus data to have a most acceptable vertical position, the monoscope pattern should be Balance in vertical position. Note: B line (Monoscope middle line) must same or nearest higher position to the A mark (Tube middle mark), refer to the attach drawing.	Figure:  OK OK NG
3	V-AMP-50 (I2C BUS CONTROL) (to be done V-shift adj)	(1) Receive Monoscope Pattern Signal (PAL 50 Hz). (2) Choose the service data 04 V-AMP-50. (3) Adjust V-AMP-50 bus data until the overscan become $10 \pm 1.5\%$. Caution 1: PLS aging TV more than 10 minutes before adjustment	
4	H-SHIFT-50 (I2C BUS CONTROL)	(1) Receive Monoscope Pattern Signal (PAL 50 Hz). (2) Choose the service data 05 H-SHIFT-50. (3) Adjust the H-SHIFT-50 bus data to have a balance position to spec of A=B (as attach drawing). (4) If cannot make it to A=B, adjust from the best point so that B slightly smaller than A.	 A B

4. SCREEN, WHITE BALANCE, SUB-BRIGHTNESS & SUB-CONTRAST ADJUSTMENT

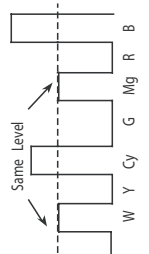
NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	SCREEN ADJUSTMENT (I2C BUS CONTROL)	(1) Make sure the following items are in INITIAL DATA before adjust CR T cutoff (a) 15 DRI-RS = 32 (b) 16 DRI-GS = 32 (c) 17 DRI-Bs = 32 (d) 18 CUT-RS = 16 (e) 19 CUT-GS = 16 (f) 20 CUT-Bs = 16 (g) 21 SUB BRI = 24 (h) 22 SUB CON = 59 (i) 32 CUT OFF = 25 (j) 35 BLOC = 4 (2) Switch TV to video mode, blue back off, with no signal and press R/C to set picture into normal condition. (3) Go to service mode, select item 31 VSD (dark screen display) (4) Adjust the Screen so that cut-off line appear in low bright, then judge that whether the cut-off line appear in Red or Green or Blue color, in this condition between CUT-RS & CUT-GS & CUT-Bs, fix the data of the color appear in cut-off line and adj the other two cut-off data (Note 1) so that cut-off line color become white. (5) Turn the screen VR of FBT so that cut-off line just disappear	Note 1: During service mode select 31VSD (Dark Screen Display), if the vertical line does not appear, Please press vol up key.
2	WHITE BALANCE ADJ (to be done after screen adj) (I2C BUS CONTROL)	(1) WHITE (HIGH BEAM) (In Window Pattern Signal) First use Minolta Color Analyzer CA100, let the gun point at Dark White position (as drawing attach), Adj SUB-BRI until LUMINANCE Y become 4 cd/m², then let the gun point at White position (as drawing attach), Adj SUB-CON until LUMINANCE Y become: 150 cd/m². Adj the DRI-RS & DRI-Bs until the axis of color temperature become 12300°K X : 0.272 , Y : 0.275 (2) DARK WHITE (LOW BEAM) Let the gun point at Dark White position, if the color temperature data shift away from the data adjusted in item 1 Screen adjustment, adjust CUT-RS, CUT-GS & CUT-Bs. Please fix the first colour appears in Screen adj item step (4) is fixed, adj the other two so that to obtain the similar axis as above. ** Repeat step 1 & 2 to get a regulated position	 *Note : Signal using W/B Pattern Generator SX-1006 (IW ATSU) or equivalent. Window Pattern Signal output level are as above:

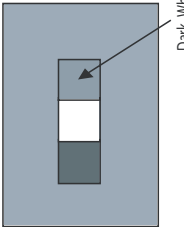
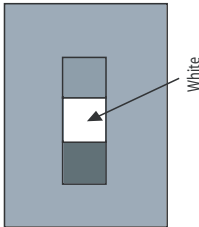
NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
5	EW-W-50 (I2C BUS CONTROL)	(1) Receive Monoscope Pattern Signal (PAL 50 Hz). (2) Choose the service data 06 EW-W-50. (3) Adjust EW-W-50 bus data until the overscan becomes 10 ± 1.5 %.	
6	E/W-PAR-50 (I2C BUS CONTROL)	(1) Receive CrossHatch Pattern Signal (PAL 50 Hz). (2) Choose the service data 07 E/W-PAR-50. (3) Adjust the 2nd vertical line from the right end of the crosshatch pattern so that the middle 4 blocks are straight.	
7	UPCOR-P AR (I2C BUS CONTROL)	(1) Receive CrossHatch Pattern Signal (PAL 50 Hz). (2) Choose the service data 10 UPCOR-P AR. (3) Adjust the 2nd upper vertical line from the right end of the crosshatch pattern so that the upper line are straight.	
8	LOCOR-P AR (I2C BUS CONTROL)	(1) Receive CrossHatch Pattern Signal (PAL 50 Hz). (2) Choose the service data 11 LOCOR-P AR. (3) Adjust the 2nd lower vertical line from the right end of the crosshatch pattern so that the bottom line are straight.	
9	H-BOW (I2C BUS CONTROL)	(1) Receive CrossHatch Pattern Signal (PAL 50 Hz). (2) Choose the service data 9 H-BOW. (3) Adjust the 2nd vertical line from the end of the crosshatch pattern until line is straight (4) Please refer Figure 9.1	
10	H-PAR (I2C BUS CONTROL)	(1) Receive CrossHatch Pattern Signal (PAL 50 Hz). (2) Choose the service data 8 H-PAR. (3) Adjust the 2nd vertical line from the end of the crosshatch pattern line is straight (4) Please refer Figure 10.1	
11	EW-TRAP (I2C BUS CONTROL)	(1) Receive CrossHatch Pattern Signal (PAL 50 Hz). (2) Choose the service data 12 EW-TRAP. (3) Adjust the 2nd vertical line from the right end of the crosshatch pattern so that the D1 (center area of the second vertical line - edge of screen) and D2 (top area of the second vertical line - edge of screen) are same.	

5. PAL CHROMA ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	SUB COLOUR (I2C BUS CONTROL)	1. Receive the "PAL Split Color Bar" signal. 2. Make the image normal with the remote controller. 3. Connect the oscilloscope to TP47R (R863) RED-OUT . Range : 500mV/Div (AC) (Use Probe 10:1) Sweep time : 10µsec/Div 4. Set the sub color adjustment mode with the remote controller, and vary the sub color data to make 100% W of the color bar and RED at the same level for adjustment shown in Fig. 1-1.	 Fig 1-1

6. NTSC CHROMA ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	SUB-TINT (I2C BUS CONTROL) (to be done after sub colour adj)	(1) Receive the "NTSC 3.58 Colour Bar" signal through AV IN from IWATSU SX1006 pattern generator. (2) Connect the oscilloscope to TP47B (R865) BLUE-OUT Range : 500mV/Div (AC) (Use Probe 10:1) Sweep time : 10µsec/Div (3) Select the "SUB-TINT" item in the ADJUSTMENT MODE. Adjust the "SUB - TINT" data to obtain the waveform shown as Figure 1.2 (W and Mg same level)	 Fig 1-2

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION /PROCEDURE	WAVEFORM OR OTHERS														
3	SUB-BRIGHTNESS (to be done after screen, white balance adj) (I2C BUS CONTROL)	(1) In Window Pattern Signal condition. (2) Using Minolta Color Analyzer CA-100, let the gun point at Dark White position (as attach drawing), adjust SUB-BRI Bus data until : <table><thead><tr><th rowspan="2">Service mode</th><th rowspan="2">Luminance (cd/m2)</th><th colspan="2">Tolerance (cd/m2)</th></tr><tr><th>Upper limit</th><th>Lower limit</th></tr></thead><tbody><tr><td>Enable</td><td>4.0</td><td>+0.5</td><td>-0.5</td></tr><tr><td>Disable</td><td>4.0</td><td>+2.5</td><td>-1.0</td></tr></tbody></table>	Service mode	Luminance (cd/m2)	Tolerance (cd/m2)		Upper limit	Lower limit	Enable	4.0	+0.5	-0.5	Disable	4.0	+2.5	-1.0	 Dark White
Service mode	Luminance (cd/m2)	Tolerance (cd/m2)															
		Upper limit	Lower limit														
Enable	4.0	+0.5	-0.5														
Disable	4.0	+2.5	-1.0														
4	SUB-CONTRAST (to be done after screen, white balance adj, sub-brightness adj) (I2C BUS CONTROL)	(1) In Window Pattern Signal condition. (2) Using Minolta Color Analyzer CA-100, let the gun point at White position (as attach drawing), adjust SUB-CON Bus data until : <table><thead><tr><th rowspan="2">Service mode</th><th rowspan="2">Luminance (cd/m2)</th><th colspan="2">Tolerance (cd/m2)</th></tr><tr><th>Upper limit</th><th>Lower limit</th></tr></thead><tbody><tr><td>Enable</td><td>150.0</td><td>+10</td><td>-10</td></tr><tr><td>Disable</td><td>150.0</td><td>+20</td><td>-10</td></tr></tbody></table>	Service mode	Luminance (cd/m2)	Tolerance (cd/m2)		Upper limit	Lower limit	Enable	150.0	+10	-10	Disable	150.0	+20	-10	 White
Service mode	Luminance (cd/m2)	Tolerance (cd/m2)															
		Upper limit	Lower limit														
Enable	150.0	+10	-10														
Disable	150.0	+20	-10														
5	BEAM CURRENT CHECK	(1) Receive the "Monoscope Pattern" signal. (2) Press R/C to set Picture NORMAL condition. (3) Connect the DC milliammeter between TP 603 (+) & TP 602 (-) (Full Scale: 3mA Range). (4) Beam current must be within : 1000 ± 100µA															

7. PROTECTOR OPERATION CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION /PROCEDURE	WAVEFORM OR OTHERS
1	H, V PROTECT OR	(1) Receive "Monoscope Pattern" signal. (2) Connect output of Bias Box to D602 cathode (C602 positive). (3) Set voltage of Bias Box to 18V and make sure the protector is not working. (4) Set voltage of Bias Box to 28.5V . The tv will four times in "ON" and "OFF" condition before the protector ON and switch to standby mode.	
2	OTHER PROTECT OR	(1) Once finish rectified Electrolytic Capacitor short testing in +B line, check all possible damaged components on +B line. (Use random selected set for inspection)	

8. AV INPUT & OUTPUT CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION /PROCEDURE	WAVEFORM OR OTHERS
1	VIDEO AND AUDIO OUTPUT CHECK	(1) Receive the "PAL Color Bar" signal (100% White Color Bar, Sound 400 Hz 100% Mod). (2) Terminate the Video output with a 75 ohm impedance. Make sure the output is as specified (1.0 Vp-p $\pm$ 3 dB). (3) Terminate the Audio output with a 10K ohm impedance. Make sure the OP is as specified (1.76 Vp-p $\pm$ 3 dB).	
2	VIDEO AND AUDIO INPUT CHECK	(1) Using the TV/VIDEO key on the remote controller, make sure that the modes change in order of TV, AV1, AV2 & TV again and the video & audio output are according to the input terminal for each mode. (2) Video cross-talk AV to TV checking : a) When connect AV1 input, check TV also o b) When connect AV2 input, check TV also o Caution: AV1 share with YU V. Therefore, if YUV signal is connected to Component in terminal, only component is will detected.	
3	COMPONENT IN CHECK	(1) Connect YUV & Audio signal to Component in terminal and Audio terminal. (2) Using the TV/VIDEO key on the remote controller, press it until the modes change to COMPONENT , confirm output is appear . (3) Audio source is share with AV1	

9. FUNCTION OPERATION CHECKING (VIDEO & AUDIO)

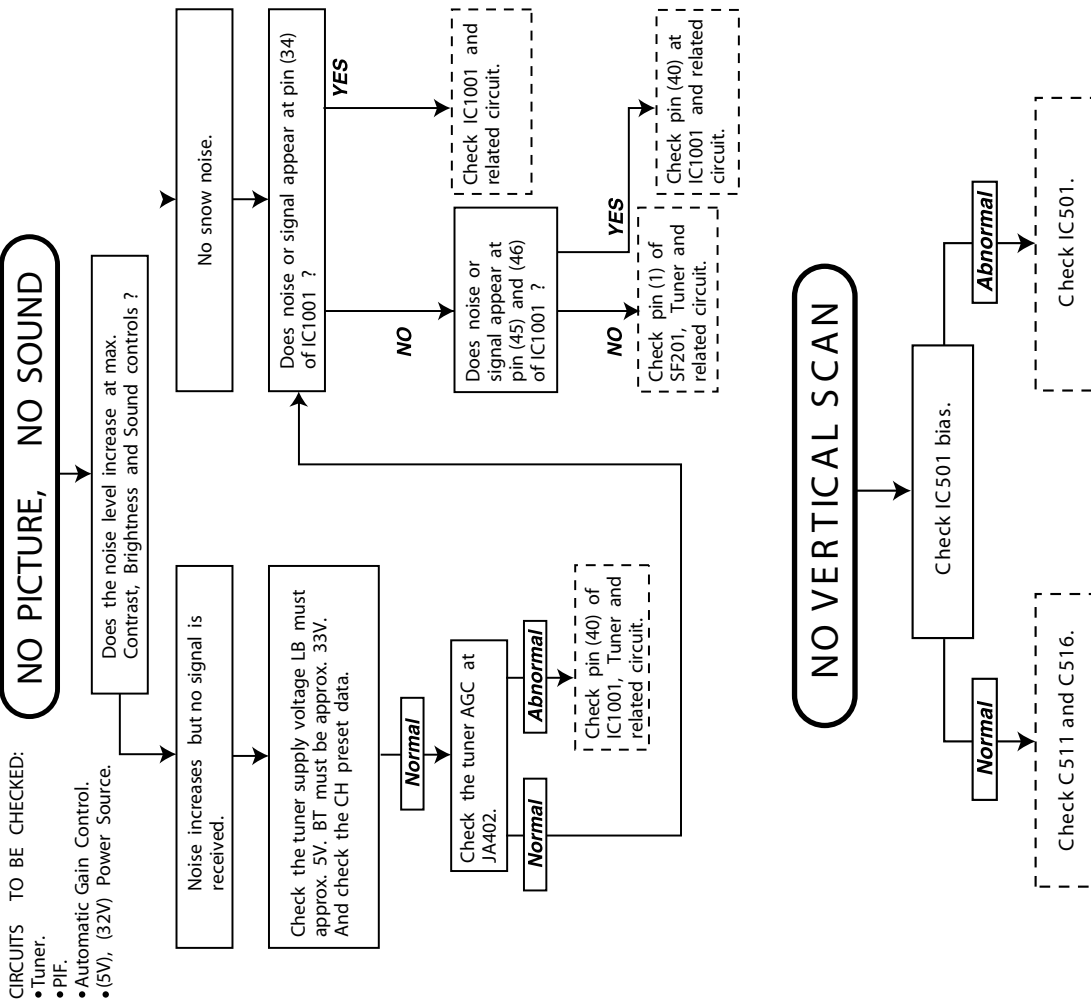
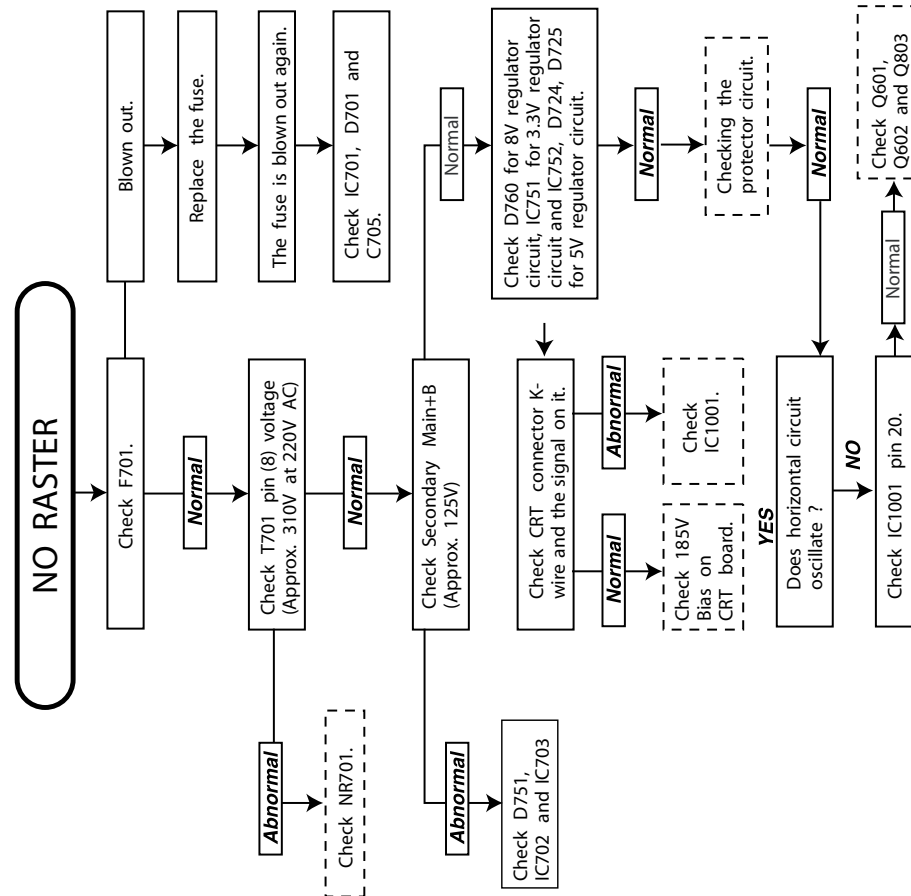
NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION /PROCEDURE	WAVEFORM OR OTHERS
1	CONTRAST Key	(1) Receive "Monoscope Pattern" signal. (2) Press to Menu mode, then select Picture Mode and set to select CONTRAST . (3) Press Volume Up/Down key to check whether the CONTRAST effect is OK or not.	
2	COLOUR Key	(1) Receive "Colour Bar" signal. (2) Press to Menu mode, then select Picture Mode and set to select COLOUR. (3) Press Volume Up/Down key to check whether the COLOUR effect is OK or not.	
3	BRIGHTNESS Key	(1) Receive "Monoscope Pattern" signal. (2) Press to Menu mode, then select Picture Mode and set to select BRIGHTNESS. (3) Press Volume Up/Down key to check whether the BRIGHTNESS effect is OK or not.	
4	TINT Key	(1) Receive the "NTSC Colour Bar" signal thru AV in. (2) Press to Menu mode, then select Picture Mode and select TINT. (3) Press Volume Up/Down key to check TINT, UP for GREEN direction and DOWN for RED direction whether is OK or not.	
5	SHARPNESS Key	(1) Receive "Monoscope Pattern" signal. (2) Press to Menu mode, then select Picture Mode and set to select SHARPNESS. (3) Press Volume Up/Down key to check whether the SHARPNESS effect is OK or NOT.	
6	CH DISPLAY COLOUR	(1) All Ch (1-99) will have an OSD display of the channel number in green colour under AFT ON condition.	
7	SURROUND	(1) Receive "music" sound signal. (2) Set MENU, then go into SOUND MENU to select SURROUND. (3) Press VOLUME UP/DOWN key to check SURROUND I, II and OFF effect.	*Note: 1) If SURROUND I/II ON, Balance function cannot be adjust. 3) SURROUND I: During stereo signal reception produces a spacious sound, making the most of the speaker's performance. 2) SURROUND II : During monaural signal reception creates monaural sound that is similar to stereophonic sound.
8	TREBLE	(1) Receive "music" sound signal. (2) Set MENU, then go into SOUND MENU to select TREBLE. (3) Press VOLUME UP/DOWN key to check TREBLE effect is OK or not.	
9	BASS	(1) Receive "music" sound signal. (2) Set MENU, then go into SOUND MENU to select BASS. (3) Press VOLUME UP/DOWN key to check BASS effect is OK or not.	
10	BALANCE	(1) Receive mono-tone signal. (2) Set MENU, then go into SOUND MENU to select BALANCE. (3) Press VOLUME UP/DOWN key to check whether the left to right BALANCE effect is OK or not.	
11	LOUDNESS	(1) Receive "music" sound signal. (2) Adjust volume to 10. (3) Set MENU, then go into SOUND MENU to select LOUDNESS. (4) Press VOLUME UP/DOWN key to check LOUDNESS effect is OK or not.	*Note: Please make sure SURROUND is set to OFF . If SURROUND I/II ON, Balance function cannot be adjust

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS																																								
12	NORMAL KEY	(1) Once in Picture Mode and the NORMAL key is pressed, all the settings will be present to normal setting. (Normal setting of selected AV mode) <table><tr><td><u>MOVIE MODE</u></td><td><u>MUSIC MODE</u></td></tr><tr><td>CONTRAST 60</td><td>CONTRAST 60</td></tr><tr><td>COLOUR +6</td><td>COLOUR 0</td></tr><tr><td>BRIGHTNESS 0</td><td>BRIGHTNESS 0</td></tr><tr><td>TINT 0</td><td>TINT 0</td></tr><tr><td>SHARPNESS +6</td><td>SHARPNESS 0</td></tr><tr><td>WHITE TEM P Mid</td><td>WHITE TEM P Mid</td></tr></table> <u>NEWS MODE</u> <table><tr><td>CONTRAST 50</td></tr><tr><td>COLOUR -6</td></tr><tr><td>BRIGHTNESS 0</td></tr><tr><td>TINT 0</td></tr><tr><td>SHARPNESS -6</td></tr><tr><td>WHITE TEM P Mid</td></tr></table> (2) Once in Audio Menu and the NORMAL key is pressed, all the settings will be present to normal setting (Normal setting of the selected AV mode) <table><tr><td><u>MOVIE MODE</u></td><td><u>MUSIC MODE</u></td></tr><tr><td>SURROUND ON</td><td>SURROUND OFF</td></tr><tr><td>TREBLE +2</td><td>TREBLE +3</td></tr><tr><td>BASS +2</td><td>BASS +5</td></tr><tr><td>BALANCE 0</td><td>BALANCE 0</td></tr><tr><td>AVL ON</td><td>AVL ON</td></tr><tr><td>LOUDNESS ON</td><td>LOUDNESS ON</td></tr></table> <u>NEWS MODE</u> <table><tr><td>SURROUND OFF</td></tr><tr><td>TREBLE 0</td></tr><tr><td>BASS 0</td></tr><tr><td>BALANCE 0</td></tr><tr><td>AVL ON</td></tr><tr><td>LOUDNESS ON</td></tr></table>	<u>MOVIE MODE</u>	<u>MUSIC MODE</u>	CONTRAST 60	CONTRAST 60	COLOUR +6	COLOUR 0	BRIGHTNESS 0	BRIGHTNESS 0	TINT 0	TINT 0	SHARPNESS +6	SHARPNESS 0	WHITE TEM P Mid	WHITE TEM P Mid	CONTRAST 50	COLOUR -6	BRIGHTNESS 0	TINT 0	SHARPNESS -6	WHITE TEM P Mid	<u>MOVIE MODE</u>	<u>MUSIC MODE</u>	SURROUND ON	SURROUND OFF	TREBLE +2	TREBLE +3	BASS +2	BASS +5	BALANCE 0	BALANCE 0	AVL ON	AVL ON	LOUDNESS ON	LOUDNESS ON	SURROUND OFF	TREBLE 0	BASS 0	BALANCE 0	AVL ON	LOUDNESS ON	Note 1: In NORMAL Mode, when press NORMAL key, will appear NORMAL OSD and all setting will set to normal of the AV mode selected.
<u>MOVIE MODE</u>	<u>MUSIC MODE</u>																																										
CONTRAST 60	CONTRAST 60																																										
COLOUR +6	COLOUR 0																																										
BRIGHTNESS 0	BRIGHTNESS 0																																										
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BASS 0																																											
BALANCE 0																																											
AVL ON																																											
LOUDNESS ON																																											
13	WHITE TEMP	(1) Receive "Monoscope Pattern" signal. (2) Set FUNCTION to select WHITE TEM P. (3) Press Volume Up/Down key to check WHITE TEMP Option, STANDARD: NORMAL SETTING, WARM for more REDDISH direction changing, COOL for more BLUISH direction changing.																																									

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR REMARKS										
14	COLOUR SYSTEM	(1) Receive the "PAL COLOUR BAR" signal, press the COLOUR SYSTEM key to select modes except PAL, check the COLOUR is not working properly. Then, select the "PAL" mode. Check again its colour so that it is working properly. (2) Receive "SECAM COLOUR BAR" signal, press COLOUR SYSTEM key to select modes except SECAM, check the COLOUR is not working properly. Then, select the "SECAM" mode. Check again its colour so that it is working properly. (3) Receive "NTSC 4.43" signal, press COLOUR SYSTEM key to select modes except NTSC 4.43, check the COLOUR is not working properly. Then, select the "NTSC 4.43" mode. Check again its colour so that it is working properly. (4) Receive "NTSC 4.43/3.58 COLOUR BAR" signal thru AV, press COLOUR SYSTEM key to select modes except N 4.43/3.58, check the COLOUR is not working properly. Then, select the "NTSC 4.43/3.58" mode. Check again its colour so that it is working properly.											
15	SOUND SYSTEM	(1) Receive "PAL-D/K" signal, press the "SOUND SYSTEM" to select BIG. I. Check the sound output is not working properly. Select D/K and check the sound output to make sure it is working properly. (2) Receive "PAL-I" signal, press the "SOUND SYSTEM" to select BIG. D/K. Check the sound output is not working properly. Select I and check the sound output to make sure it is working properly. (3) Receive "PAL-B/G" signal, press the "SOUND SYSTEM" to select I, D/K. Check the sound output is not working properly. Select BIG and check the sound output to make sure it is working properly.											
16	MPIN CHECKING	(1) Turn up the volume control to maximum, make sure the sound is heard from speakers. (2) Make sure M.P. IN feature is set to ON. (3) Plug in stereo cable in M.Pin terminal. (4) "M.P. IN" OSD will appear at bottom right corner TV screen, RF channel sound will be switched to M.Pin sound. (5) Check the sound is normal.	*Note: For model with M.P.in feature										
17	NOISE MUTE CHECKING	(1) Receive mono-tone signal. (2) Turn up the volume control to maximum, make sure the sound is heard from the speakers. Then put the unit in no signal state. (3) Check the sound mute is effective. (4) Finally turn sound level of CTV to minimum.											
18	OSD LANGUAGE QUANTITY CHECK	(1) Check OSD LANGUAGE quantity and type for respective model. <table><tr><th>MODEL</th><th>QUANTITY</th><th>ENGLISH</th><th>CHINESE</th><th>MALAY</th></tr><tr><td>21S-FX10M</td><td>3</td><td>0</td><td>0</td><td>0</td></tr></table>	MODEL	QUANTITY	ENGLISH	CHINESE	MALAY	21S-FX10M	3	0	0	0	
MODEL	QUANTITY	ENGLISH	CHINESE	MALAY									
21S-FX10M	3	0	0	0									

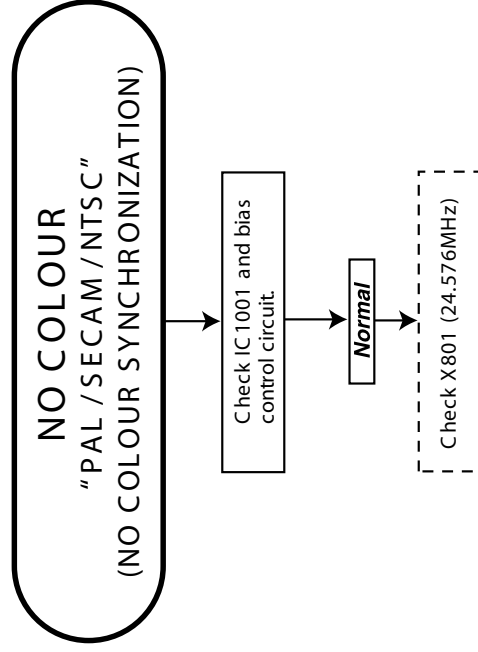
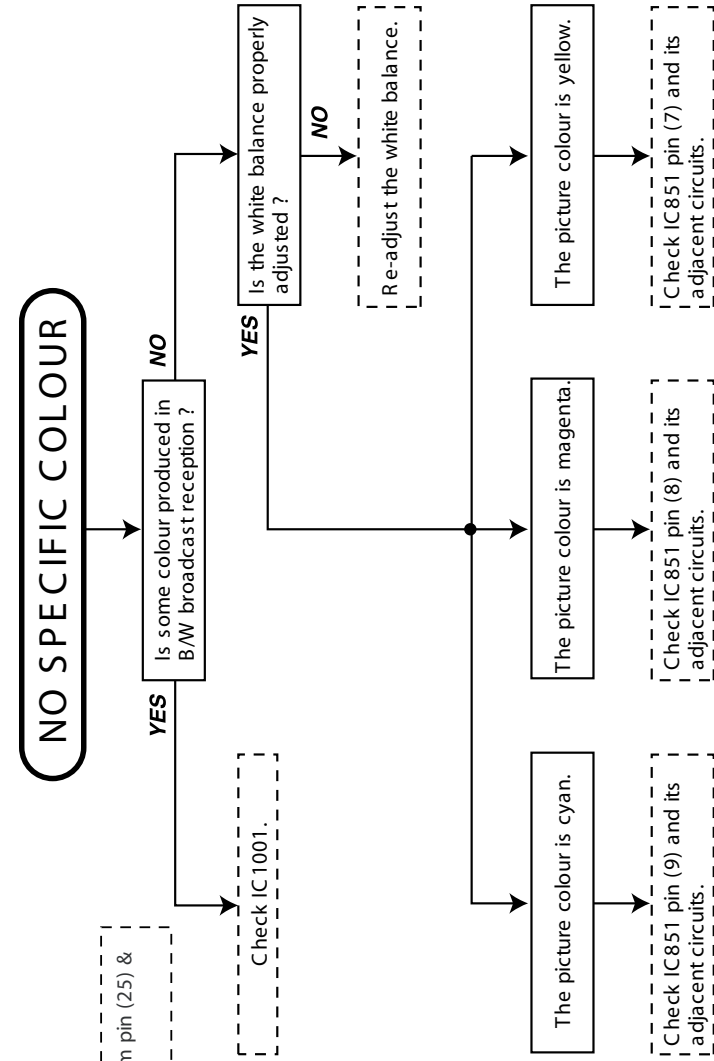
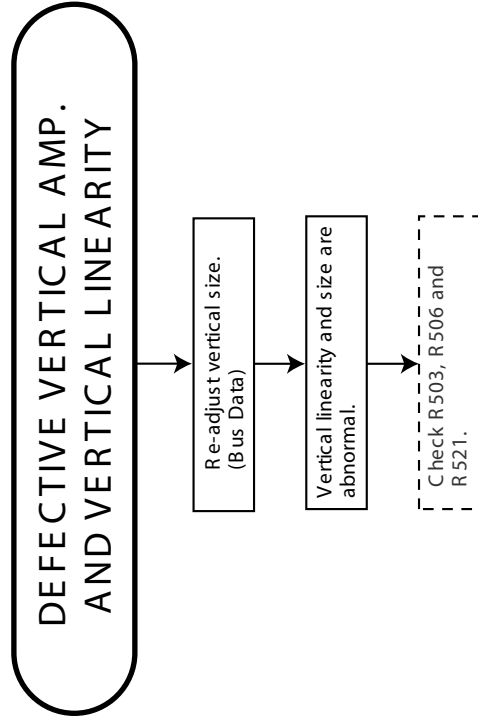
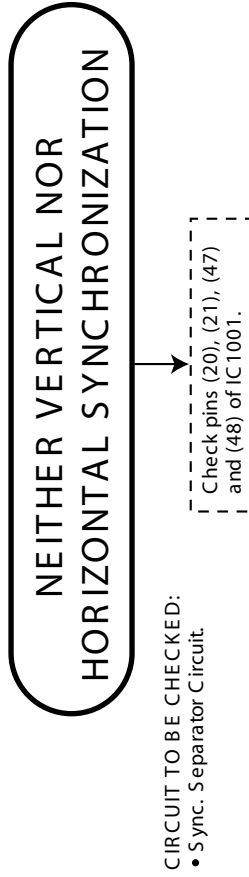
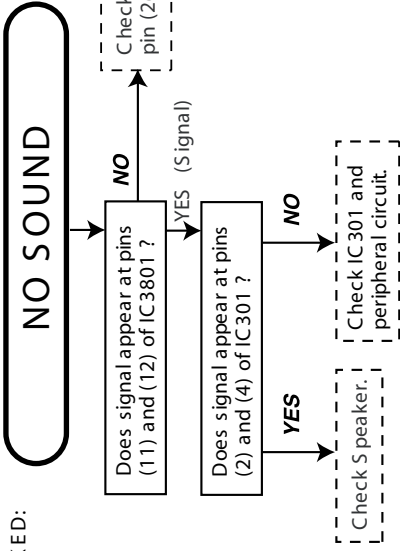
10. SHOCK TEST CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	SHOCK TEST	(1) Hit at the top of TV set for two time. (2) Check TV set not damage and TV operation operate correctly.	

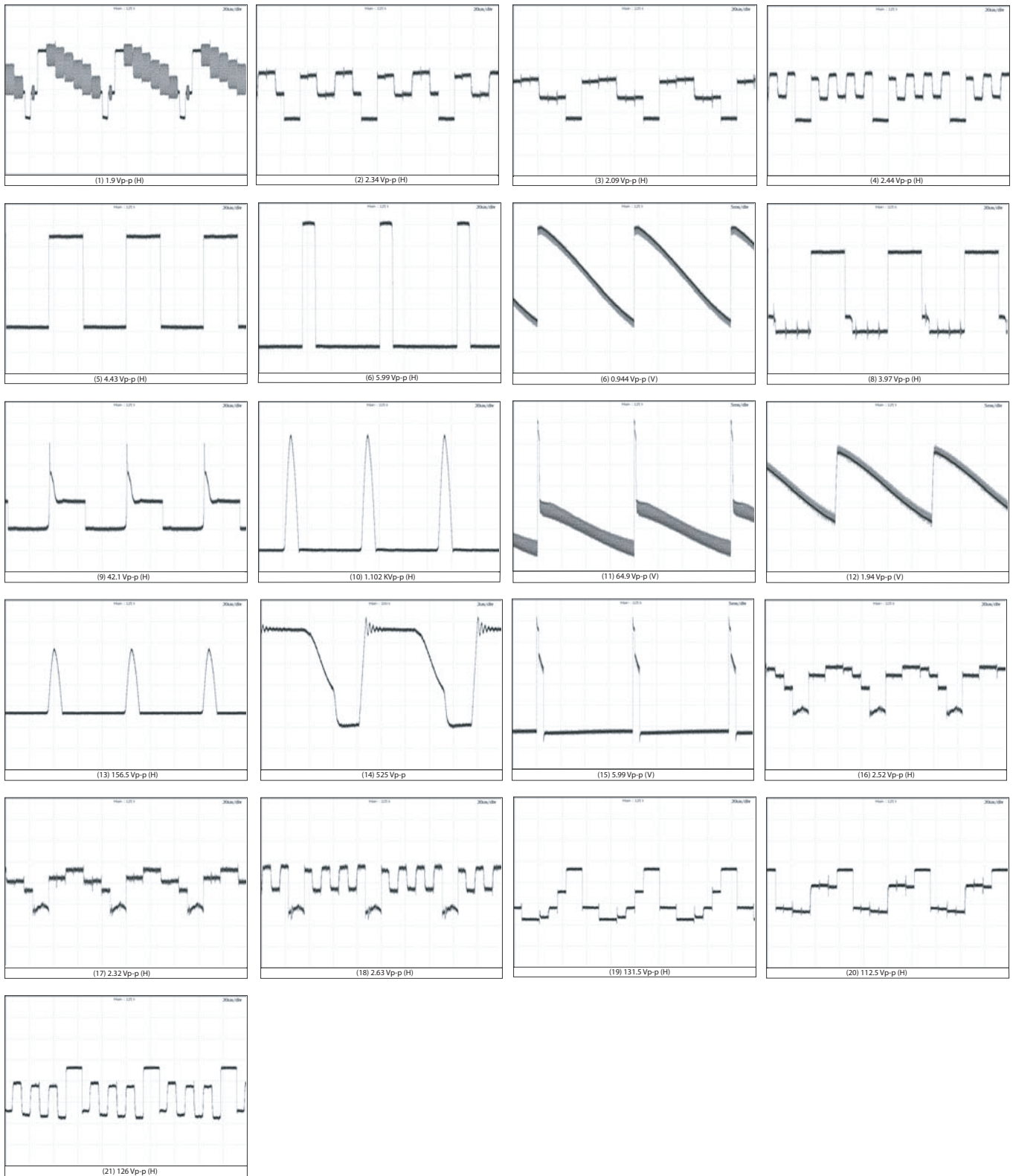


CIRCUITS TO BE CHECKED:

- Sound Detector Circuit.
- Sound Switch and Att. Control.
- Audio Output Circuit.

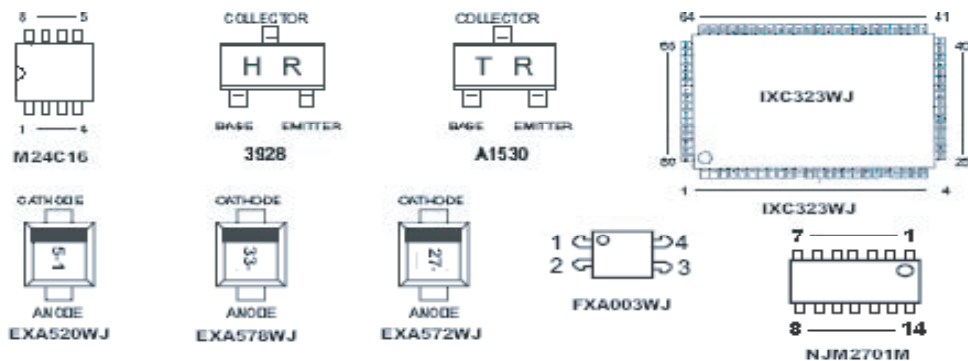


WAVEFORMS

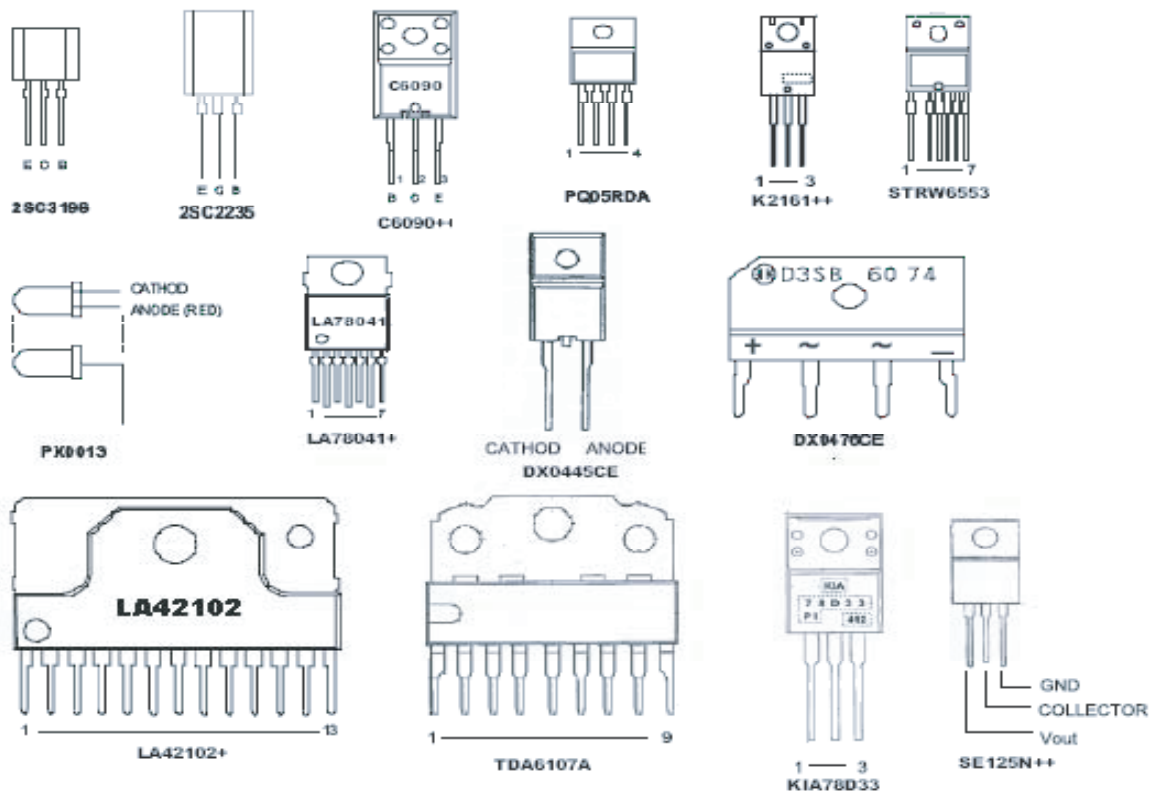


SOLID STATE DEVICE BASE DIAGRAM

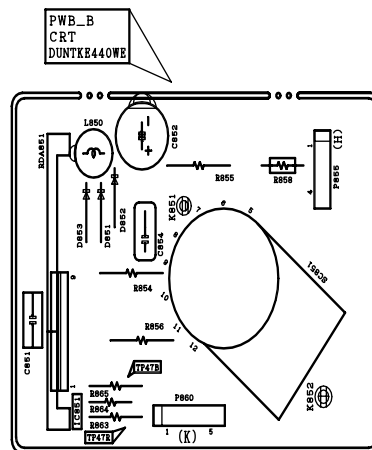
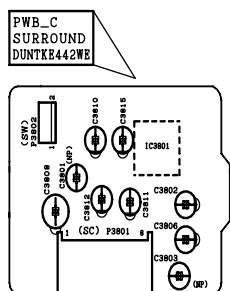
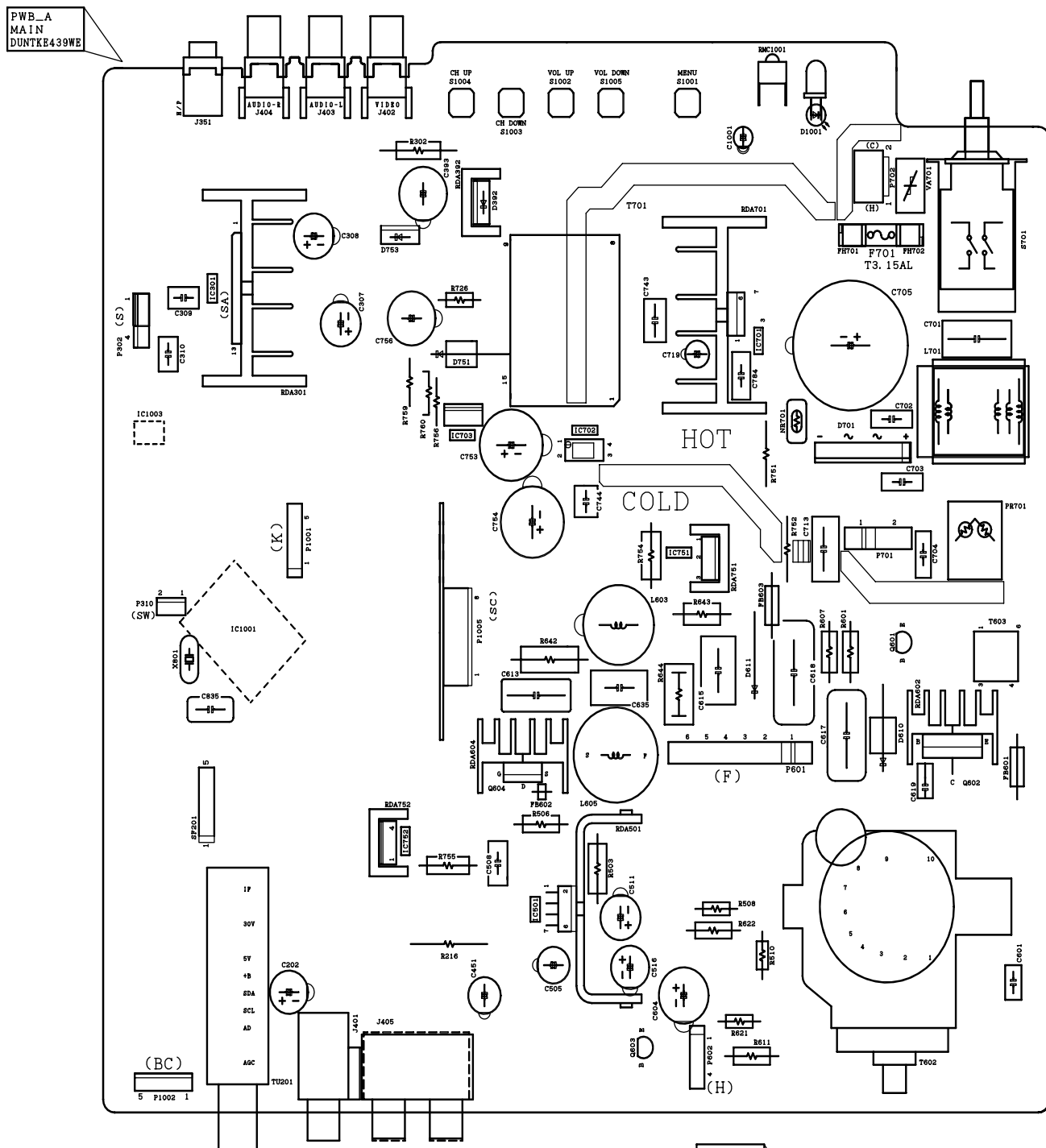
TOP VIEW



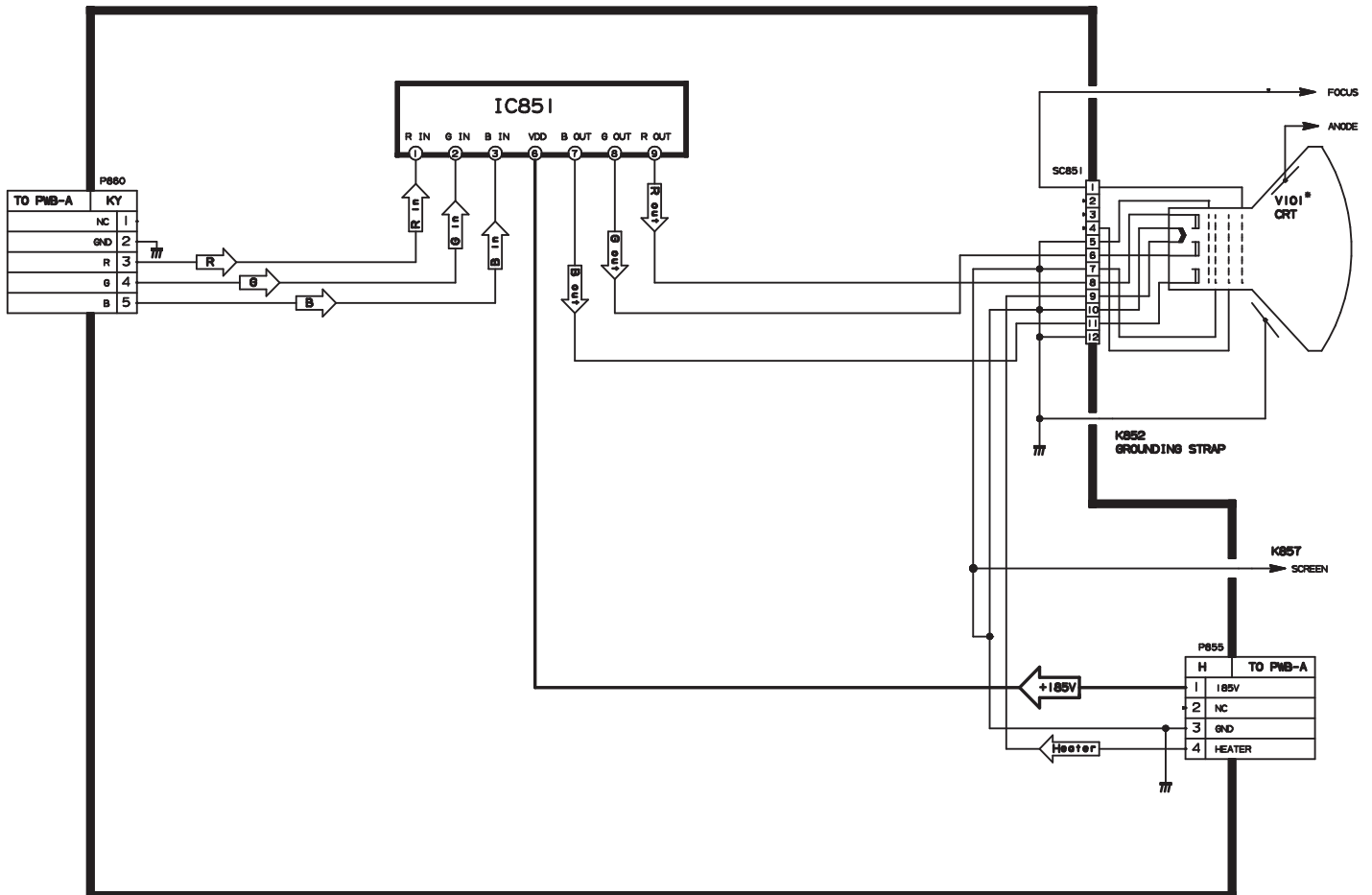
SIDE VIEW



CHASSIS LAYOUT

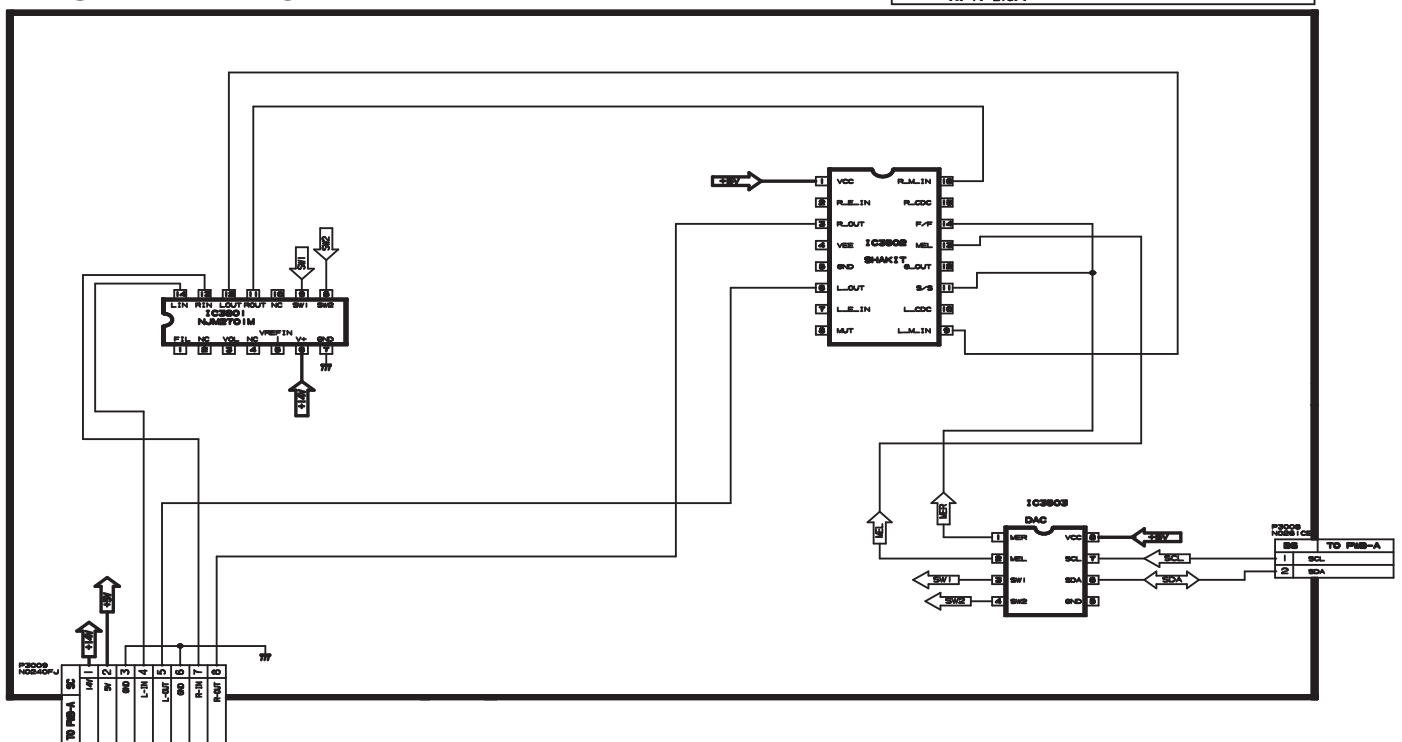


CRT UNIT

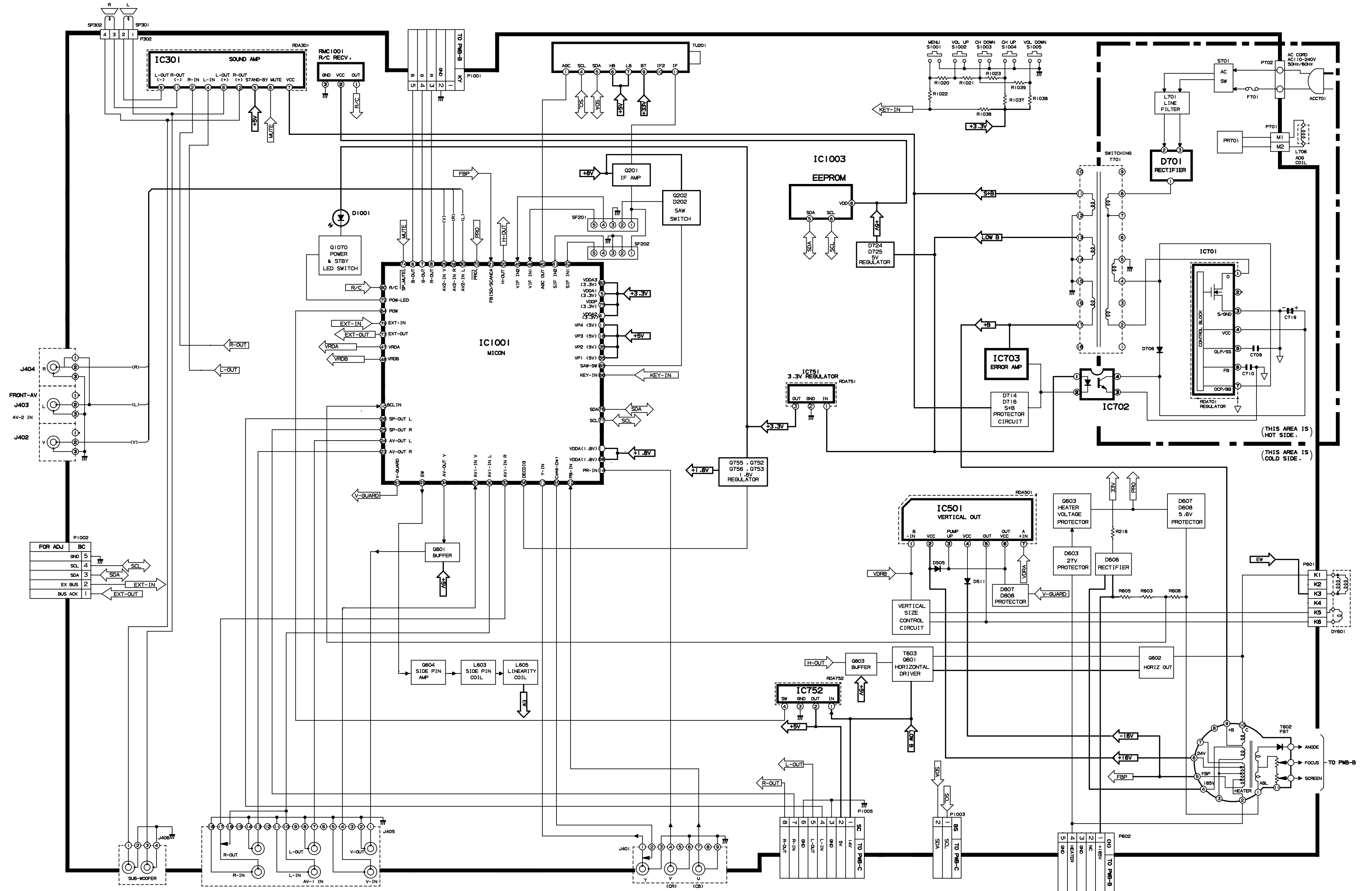


SHAKIT UNIT

NOTE: 1. THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHM, M=MEGOHM).
2. ALL RESISTORS ARE WATT UNLESS OTHERWISE NOTED.
3. UNIT OF ALL CAPACITORS ARE P WITH PREFIX SYMBOL
(G, P, ETC).



BLOCK DIAGRAM MAIN UNIT



DESCRIPTION OF SCHEMATIC DIAGRAM

SAFETY NOTES:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

IMPORTANT SAFETY NOTICE:

PARTS MARKED WITH "⚠" () ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

SERVICE PRECAUTION:

THE AREA ENCLOSED BY THIS LINE () IS DIRECTLY CONNECTED WITH AC MAINS VOLTAGE. WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.

NOTES:

1. The unit of resistance "ohm" is omitted.
(K = 1000 ohms, M = Mega ohm).
2. All resistors are 1/16 watt, unless otherwise noted.
3. All capacitors are μF , unless otherwise noted. (P = $\mu\mu\text{F}$).

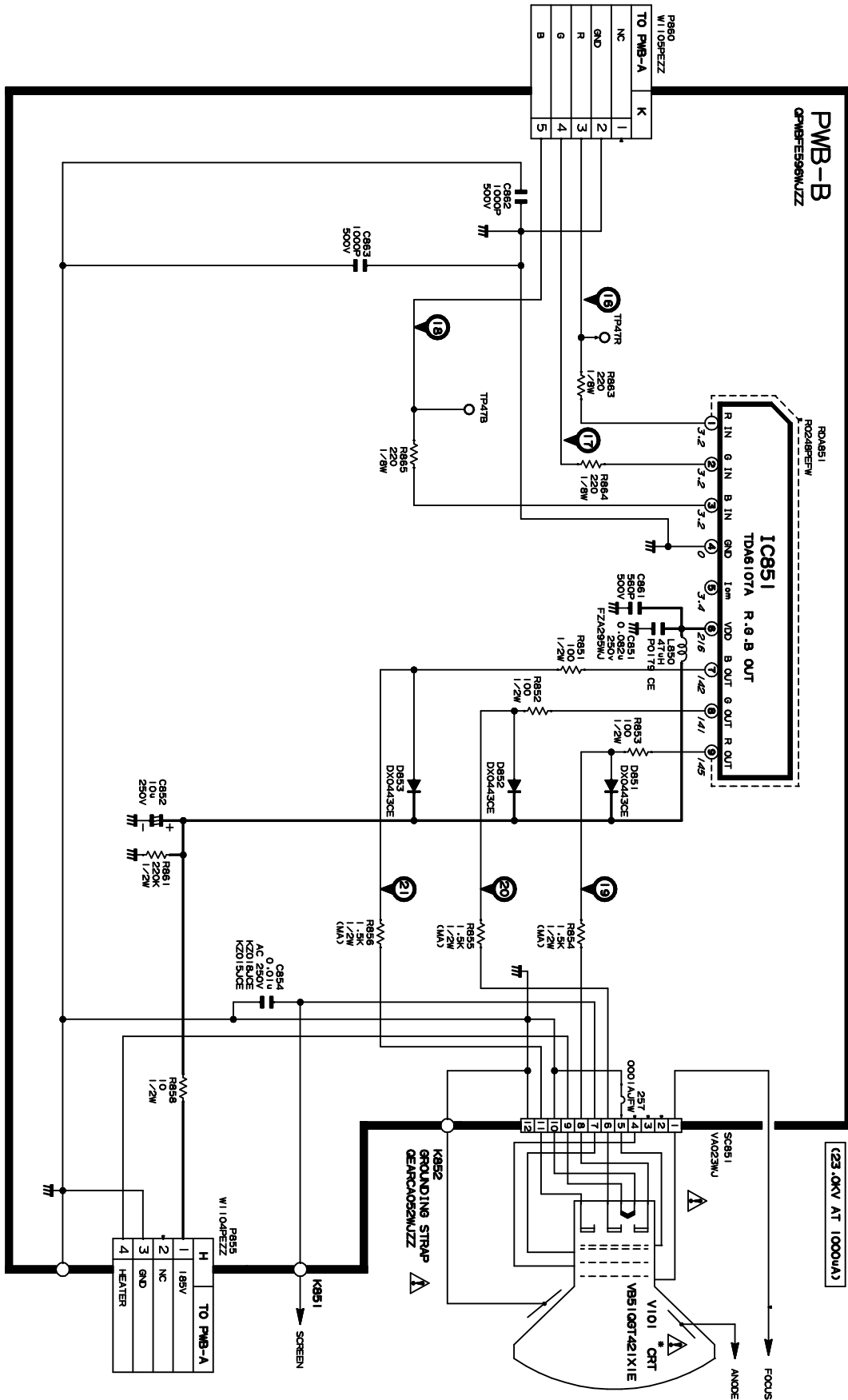
VOLTAGE MEASUREMENT CONDITIONS:

1. Voltages in parenthesis measured with no signal.
2. Voltages without parenthesis measured with 3mV B & W or Colour signal.
3. All the voltages in each point are measured with VTVM.

WAVEFORM MEASUREMENT CONDITIONS:

1. The colour bar generator signal of 1.0V peak applied at pin (24) of IC201.
2. Approximately 4V AGC bias .

SCHEMATIC DIAGRAM: CRT UNIT



▲ AND SHADED () COMPONENTS
= SAFETY RELATED PARTS.
▲ MARK = X-RAY RELATED PARTS.

NOTE: 1. THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=10000 OHMS).
2. THE UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(U, P, ETC).

REPLACE WITH A PICTURE
TUBE OF THE SAME TYPE
NUMBER FOR CONTINUED
SAFETY.

(23.0KV AT 1000UA)

SCHEMATIC DIAGRAM: MAIN UNIT

NOTE 1: THE UNIT OF RESISTANCE "OM" IS OMITTED.
(K=1000 OHMS, M=100000 OHMS).
NOTE 2: ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
NOTE 3: UNIT OF ALL CAPACITORS ARE P WITH PREFIX SYMBOL.
(N, P, ETC.).

AND SHADED COMPONENTS = SAFETY RELATED PARTS.
MARK = X-RAY RELATED PARTS.

FRONT-AY
J402 EAD09WJ04
J403 EAD09WJ09
J404 EAD09WJ09
J405 EAD09WJ09
J406 EAD09WJ09
J407 EAD09WJ09
J408 EAD09WJ09
J409 EAD09WJ09
J410 EAD09WJ09
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